Figure 1.7. *Gran Turismo Sport* by Polyphony Digital (PlayStation 4). (See Color Plate VI.)

modes in which players shoot at one another, collect loot or engage in a variety of other timed and untimed tasks. For a discussion of this genre, see http://en.wikipedia.org/wiki/Racing_game.

A racing game is often very linear, much like older FPS games. However, travel speed is generally much faster than in an FPS. Therefore, more focus is placed on very long corridor-based tracks, or looped tracks, sometimes with various alternate routes and secret short-cuts. Racing games usually focus all their graphic detail on the vehicles, track and immediate surroundings. As an example of this, Figure 1.7 shows a screenshot from the latest installment in the well-known *Gran Turismo* racing game series, *Gran Turismo Sport*, developed by Polyphony Digital and published by Sony Interactive Entertainment. However, kart racers also devote significant rendering and animation bandwidth to the characters driving the vehicles.

Some of the technological properties of a typical racing game include the following techniques:

- Various "tricks" are used when rendering distant background elements, such as employing two-dimensional cards for trees, hills and mountains.
- The track is often broken down into relatively simple two-dimensional regions called "sectors." These data structures are used to optimize rendering and visibility determination, to aid in artificial intelligence and path finding for non-human-controlled vehicles, and to solve many other technical problems.
- The camera typically follows behind the vehicle for a third-person per-